POLICY RESEARCH WORKING PAPER 1859

# Lessons from São Paulo's Metropolitan Busway Concessions Program

*Jorge Rebelo*
*Pedro Benvenuto*

Lessons learned from an imaginative pioneering effort to give busway concessions to the private sector — which ultimately failed to materialize for the municipality but resulted in one major concession for the state.

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Latin America and the Caribbean Region
Finance, Private Sector, and Infrastructure Department
and
Brazil Department
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## Summary findings

In an earlier paper (Policy Research Working Paper 1546), Rebelo and Benevenuto described a pioneer initiative of São Paulo's municipal and state governments, to give the private sector a concession on building and operating a number of "trunk" busways. At the time, the São Paulo Municipal Government had already awarded a number of busway corridors to private consortia, although the consortia had yet to get the financing needed to implement the investment plan. On the other hand, the state had not yet awarded its first corridor and was still adjusting the bidding documents based on comments received from interested parties.

In this paper, Rebelo and Benevenuto describe what happened since then and draw lessons for the future.

After a long, successful bidding process, this imaginative and pioneering program launched by the municipality failed to materialize because of problems in getting financing. Possibly the market felt that the risks involved in building and operating the system outweighed the benefits and that the São Paulo and Brazilian market was not yet prepared to accept such a challenge without better partial risk guarantees. The state learned from the mistakes of the municipality and was successful in the concession of the São Mateus-Jabaquara corridor.

Among the lessons learned from this project:

- Private bus operators in Brazil are generally traditional entrepreneurs. They must be taught how to prepare financing plans or at least to get the best advice about putting together a project's financial engineering design. In this case, all consortia turned to BNDES for financing, probably because their loan interest rates were lower than those of commercial banks but also because the concession was with the government. They did not consider other options such as the International Finance Corporation or other private-sector-related development institutions.
- The São Paulo municipality should also have undertaken detailed economic evaluation of the projects, from the standpoint of the region as a whole, including the impact on other modes of transportation and on systems integration. Such analysis is required by all bilateral and multilateral development institutions, including BNDES, a national development bank.
- When private operators are paid for vehicle-kilometer supplied and when the state collects all revenues and then pays the operators, concession contracts or operating revenues cannot be easily used as guarantees. Before defining tariff mechanisms, governments should think through the impacts they might have on financing, since the revenues collected are often the best guarantee that can be offered.

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This paper — a joint product of the Finance, Private Sector, and Infrastructure Department and the Brazil Department, Latin America and the Caribbean Region — is part of a larger effort in the region to promote concessions in urban transport. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Allison Turner, room I9-138, telephone 202- 473-0933, fax 202-676-9594, Internet address aturner@worldbank.org. December 1997. (17 pages)

# Lessons from São Paulo's Metropolitan Busway Concessions Program

*Jorge Rebelo*

*Pedro Benvenuto*

*By Jorge Rebelo and Pedro Benvenuto*[1]

1. In the paper entitled "Concessions of Busways to the Private Sector - The São Paulo Metropolitan Region Experience" of this Policy Research Working Series (#1546), we described in detail a pioneer initiative of the Municipal and State Governments of São Paulo, to concession out to the private sector the construction and operations of a number of "trunk" busways. At the time we wrote the article, the São Paulo Municipal government had already awarded a number of the busway corridors to private sector consortia. The consortia, however, would have to obtain the financing required to implement the investment plan. The State, on the other hand, had not yet awarded its first corridor and was still adjusting the bidding documents based on the comments received from the interested parties. In this paper we describe what happened since then and we draw lessons for the future.

**The Municipality Busway Program :**

2. Table 1 gives a description of the busway corridors awarded by the Municipality. Before we look at the results of this program we review quickly the main objectives of the program and how the bidding process was undertaken.

3. **Objective** . The objective of the program was to create a structural network of integrated busways designed to substantially improve the level of service provided to bus users and to reduce the operating and management costs as compared to traditional operations by using the Build-Operate-Transfer (BOT) concept.

4. The basic philosophy of this program was to rationalize the existing network of regular public and private bus services, by creating 15 exclusive busways with a total length of 241km. The exclusive busways would require a special treatment of the road space insofar as the pavement is concerned, bus stops, horizontal and vertical signing, and traffic lights to allow a substantial reduction in bus travel times.

5. The bus stops had an average spacing of 500 meters, the minimum to guarantee the fluidity of the bus traffic and the automobile traffic in general. It also included bus stops with fixed pavement and ramps with the appropriate gradient to be used by the

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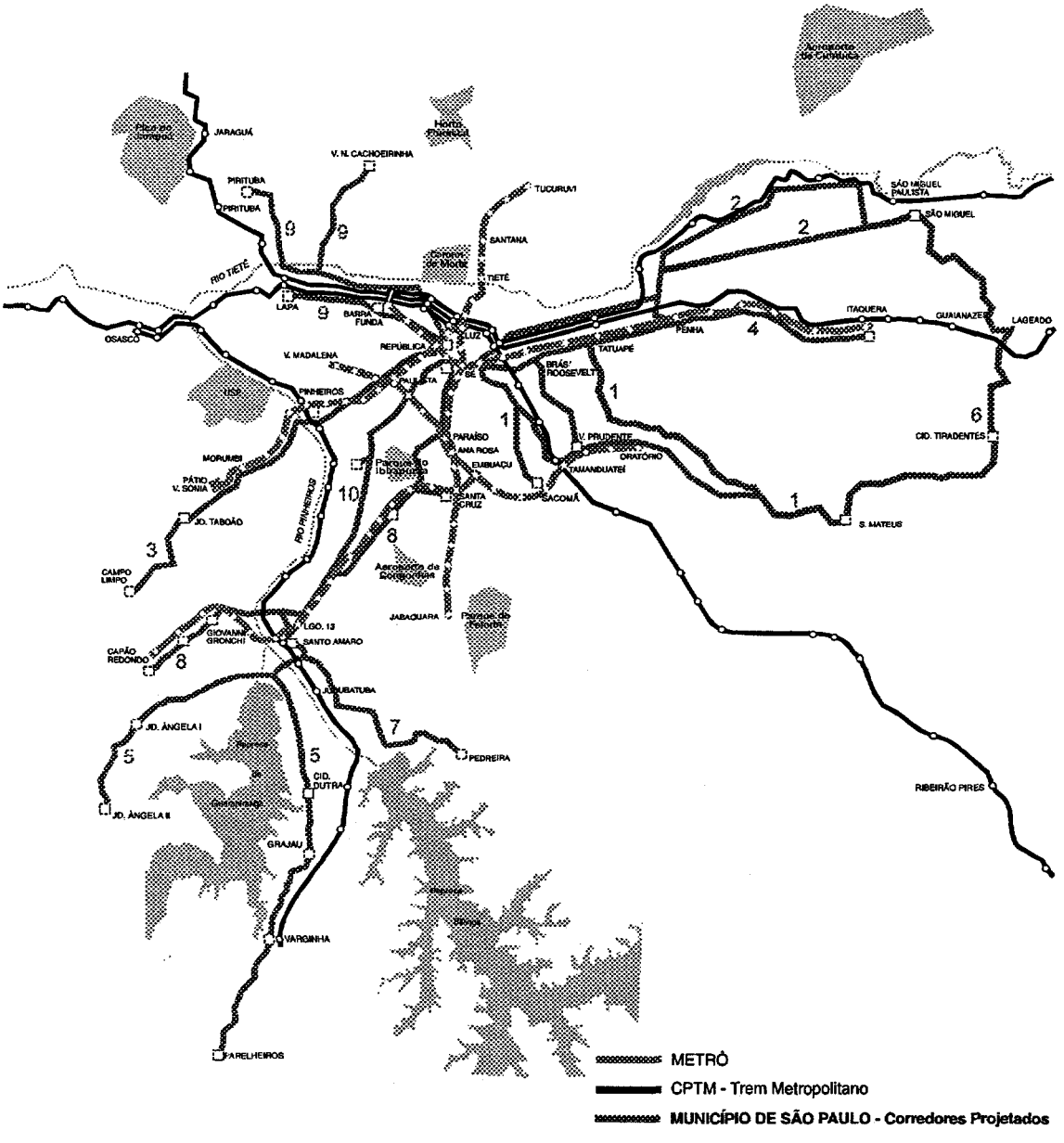
physically disadvantaged, as well as to allow for the simultaneous operation of two articulated buses.

6. The operational system for these exclusive busways was designed as trunk-busways. In these corridors, the trunk-lines, operations were carried out by smaller fleets of high capacity articulated buses, normally originating in a transfer terminal located at the beginning of the corridor. Outside the corridor, the operation was carried out by feeder bus lines on conventional busways starting in the periphery and serving the terminals and transfer stations along the corridor, guaranteeing physical and tariff integration.

**CORRIDORS AND CONSORTIA TO WHICH THEY WERE AWARDED IN THE SÃO PAULO MUNICIPALITY PROGRAM**

| CORRIDOR | WINNING CONSORTIA | KM | FLEET |
|---|---|---|---|
| Anhaia Mello -Sapopemba - D. Pedro | TRANSBUS | 36,6 | 180 |
| Assis Ribeiro -Carvalho Pinto | CAMARGO CAMPOS/BADRA | 38,0 | 150 |
| Francisco Morato | ENTERPA | 16,2 | 90 |
| Radial Leste | | 18,2 | 50 |
| Rio Bonito-Guarapiranga | COWAN/VSA | 42,8 | 33 |
| Guaianases | ENGEFOR/NAKANO | 24,9 | 30 |
| Sabará | COWAN/VSA | 9,2 | 50 |
| Ibirapuera | IBIRAPUERA | 16,3 | 213 |
| Pirituba-São João-Inajar de Souza | JARAGUÁ | 24,0 | 230 |
| Santo Amaro (Reforma) | COWAN/VSA | 14,5 | 30 |

7. The exclusive busways were designed as to function with continuous monitoring to assure service reliability. Bus priority at the intersections in relation to the other automobile traffic was also assured , especially at crossings, through a traffic light system regulated to increase the fluidity of bus traffic. The buses were equipped with communication equipment which allowed them to be controlled by a Central Operational Control Center.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PIRITUBA
V. N. CACHOEIRINHA
TUCURUVI
SANTANA
TIETÊ
RIO TIETÊ
LAPA
BARRA FUNDA
LUZ
REPÚBLICA
SÉ
PENHA
TATUAPÉ
BRÁS/ ROOSEVELT
SÃO MIGUEL PAULISTA
SÃO MIGUEL
ITAQUERA
GUAIANAZES
LAGEADO
OSASCO
V. MADALENA
PINHEIROS
PAULISTA
PARAÍSO
ANA ROSA
V. PRUDENTE
ORATÓRIO
CID. TIRADENTES
MORUMBI
EUBIACU
TAMANDUATEÍ
SACOMÃ
S. MATEUS
PÁTIO V. SÔNIA
JD. TABOÃO
SANTA CRUZ
RIO PINHEIROS
CAMPO LIMPO
JABAQUARA
GIOVANNI GRONCHI
LGO. 13
SANTO AMARO
CAPÃO REDONDO
JURUBATUBA
JD. ÂNGELA I
PEDREIRA
CID. DUTRA
RIBEIRÃO PIRES
JD. ÂNGELA II
GRAJAÚ
VARGINHA
PARELHEIROS
METRÔ
CPTM - Trem Metropolitano
MUNICÍPIO DE SÃO PAULO - Corredores Projetados

8. Articulated and bi-articulated buses would be used, with doors on both sides (the ones in the left side of the vehicle at the ground level, to allow for the loading of passengers at the terminals and bus stops through platforms) and equipped with electronic system for validation and control of tickets.

Results of the bidding process

9. The São Paulo Municipality undertook with success the bidding process (with a technical and price proposals) which culminated in the award and signing of contracts with several consortia (see Table 1) for the implementation of the works agreed and the operation of the system for a period of 8 years.

10. The consortia which were selected had the obligation of preparing the engineering designs, build and maintain the roadway, the terminals, the transfer stations, the traffic signalling, the landscape and to operate the vehicle sets.

11. The Municipal Government had the obligation to pay the Consortia in two parts: one to amortize the infrastructure investments and the other to compensate for the operating costs.

12. The remuneration of the infrastructure investments was based in the proposal of each winning bidder, and reflected the net present value of the investment costs. In the analysis of the bids, these costs were evaluated against the solutions proposed for the corridor and compared with a preliminary budget prepared by the State based on the most likely physical and operational situation of each link under analysis.

13. The remuneration of operating costs was established through a spreadsheet , included in the bidding documents, based on the payment of a fixed value estimated by a formula which takes into account the kilometers travelled by the fleet and the number of passengers transported.

14. After the signing of the contracts with the Municipality, the Consortia had to complete the Project Funding of their proposals, and were led to believe that they would be able to do so mainly through financing of the National Economic and Social Development Bank of Brazil (BNDES) a federally owned development Bank. They could, however, search for their financing from other sources.

**Lessons learned**

15. After this long and successful bidding process, this very imaginative and pioneering program for busway concessions launched by the São Paulo Municipality has not been implemented. After the corridors had been awarded to the several private consortia which bid for them, there were problems in securing the required financing. Because the program was not only innovative but a very convincing way of postponing public investment by drawing on private sector funds, it is important to draw some lessons from this experience and attempt to see why the program has failed. In the next paragraphs we describe the main reasons for the failure of the program by reviewing what the three main

actors in this "program" did or should have done: a) the private sector consortia who won the contracts; b) the municipal government ; and c) the credit agencies.

16. The private sector consortia

- All of the winners sought financing from the same bank, the Brazilian National Social Development Bank (BNDES). None of the consortia looked for other sources of financing such as Commercial banks, the International Finance Corporation or even one of the multilateral investment Banks (IBRD or IDB) which could offer partial risk guarantees for loans the consortia could obtain from commercial banks.
- The winning consortia were not established with a long-term perspective of exploration of the market. Instead, the civil works contractors were strictly interested in the short term, mainly in the implementation of the infrastructure works, and the traditional bus operators of regular lines confined their interest to maintaining the provision of services.
- There was no incentive for exploring the options available in non-tariff revenue market (this was very marginally treated in the bidding documents). These revenues could, in a way, lower the investments to be repaid by the Municipality.
- Although all the winners made a substantial effort to secure the contracts by presenting very imaginative engineering and operational proposals, they relegated to a second place the financing aspects of the contracts. In fact, after not having much success in their attempts to seek financing from the BNDES, the private entrepeneurs started to put pressure to transform the BOT contracts into ordinary works paid by quantity of works completed. So, they wanted to revert to traditional finnacing methods

17. From the above we may conclude that, given the lack of knowledge about financing alternatives and a mindset which still sees the public sector as the main provider of funds, the entrepeneurs gave up very easily. It is necessary to teach to the entrepeneurs alternative financing mechanisms and publicize ways by which they can access other national and international sources of financing.

18. Municipal Government

- Despite its drive to innovate and to seek private financing to undertake investments which could not be timely financed by public funds due to budgetary restrictions, the São Paulo Municipality should have been less optimistic in its assumptions about the capacity and willingness of the private sector to come up with the required funds.

- São Paulo Municipality (SPM) should have also assumed a flexible stance in its bidding documents by trying to allow some space to negotiate unforeseen

events rather than being worried with transforming the contracts in instruments to monitor and discipline the winners. For example, there should have been provisions to provide guarantees for the financing of the operators by commercial banks. In fact, SPM ended up creating such a facility but it was an afterthought and was not sufficient to appease the banks.

19. The São Paulo Municipality, being the biggest municipality in the SPMR, should have undertaken a detailed economic analysis from the standpoint of the SPMR, taking into account the effect of the proposed system on other modes, rather than doing just a financial analysis. Being a development organization, BNDES was certainly sensitive to the modal impacts of the system on the SPMR. It seems that the São Paulo Municipality analysis was very strong from an engineering and environmental standpoint but did not have the same rigor in terms of economic and financial analysis.

20. Financial lending institutions

- BNDES apparently examined the requests for financing but arrived at the conclusion that, from an economic (and not from a financial standpoint) the proposed corridors were not viable. Being above all a national economic development Bank , BNDES is primarily interested on the economic rate of return of the projects rather then a financial rate of return. BNDES also found that the original analysis that led to the design of the corridors was flawed and did not take into account the effect on other modes, mainly rail based modes, in some cases proposing trunk bus lines where subway lines were planned. Furthermore, BNDES found some of the projects rather expensive .

- Insofar as competition and adequate technology is concerned, and not integration of the busways with other modes, such as the suburban rail and subway networks, BNDES's evaluation concluded that some of the proposed technological options were already close to their capacity in the first years of operation and would become saturated soon thereafter. Also in the investment budgets submitted, the costs of basic construction inputs were overestimated and did not reflect that an effort had been made to search for the optimal design.

- BNDES also argued that, when compared to traditional financing TO the public sector, the proposed option would be financially more costly.The cost of the proposed scheme , which uses financing by the private sector to be repaid by the public sector, would have to include not only the agreed repayment schedule but also the costs attributed to the risk that the Municipality would delay or default in its payments.
- BNDES argues that while the proposed scheme would in the short term resolve the problem created by the interdiction of financing by BNDES to the

public sector, in the medium and long term the proposed scheme was going to increase the transport operating costs.

- In addition, since this was a contract to provide services with an 8 year term and not really a full concession in which the winner assumes all market risks, the scheme was equivalent to two separate subcontracts: one for the implementation of the civil works and another exclusively for operation. Consequently , there would be little interest on the part of the winners to come up with solutions for structural problems and to generate other revenues. If it was not a concession, the private sector was not assuming the market risks, and most probably the public sector would not obtain the gains in productivity which it was seeking by transferring the provision of services to the private sector.

- BNDES examined the projects but requested very expensive real guarantees (130% of the investments) from the borrowers. These guarantees could only come from the personal assets of the directors of the firms, assets of the private sector consortia or commercial bank security bonds. This made it almost impossible for the private sector to pursue this financing. Since the revenues would be collected through a clearing house mechanism, BNDES did not accept any revenue guarantees.

- The alternative proposed to BNDES was to use the contracts between the concessionaires and the SPM as guarantees. This did not work because of the legal nature of these contracts, which were considered more as management contracts rather than concessions, and especially because the revenues were collected by the SPM rather than the operator. This suggested that the revenues belonged to the SPM and not to the operator.

- Some say that BNDES being a government institutition was pressured by the railway lobby not to lend to the bus operators and for political reasons did not want to lend to projects sponsored by the SPM government. All this is denied by BNDES which claims that the projects were not feasible from an economic standpoint and for that reason they would not qualify for financing. Since this alternative failed, the SPM proposed to create a Fund (FUNCOR) with its own budget funds to be used as a counter-guarantee for BNDES financing. But this attempt did not materialize.

**The State of São Paulo Busway Program**

21. In 1983, the GSSP determined that the São Paulo Metro Company (Metrô) would be responsible for planning and implementing a set of exclusive intermunicipal trolleybus corridors, which would be integrated with the São Paulo municipal bus lines and the State-owned rail-based network. As part of this mandate, the Metrô had the task of implementing the first priority connection between ***São Mateus and Jabaquara***, creating

a perimetral interconnection ring between the São Paulo (São Mateus, in the east) Santo André, São Bernardo do Campo, Diadema and São Paulo (Jabaquara in the south).

22. The implementation of infrastructure works, acquisition and installation of equipment, as well as the development of the Operational and Integration Projects, took place from 1984 to 1987, at which time the responsibility of operation of all State "intermunicipal" bus services was delegated to the Metropolitan Urban Transport Company (Empresa Municipal de Transportes Urbanos - EMTU), also under the GSSP.

Project Rationale

23. The main objective of the São Mateus-Jabaquara corridor is to satisfy an important lack of public transport supply in the southeastern region of the SPMR, due to a very high passenger demand between two important regional nodes, which until now were only served by conventional bus services. The program also attempted to reconcile the needs of the municipalities involved by providing a structural transport connection which took into account land use and physical ,operational, and tariff integration.

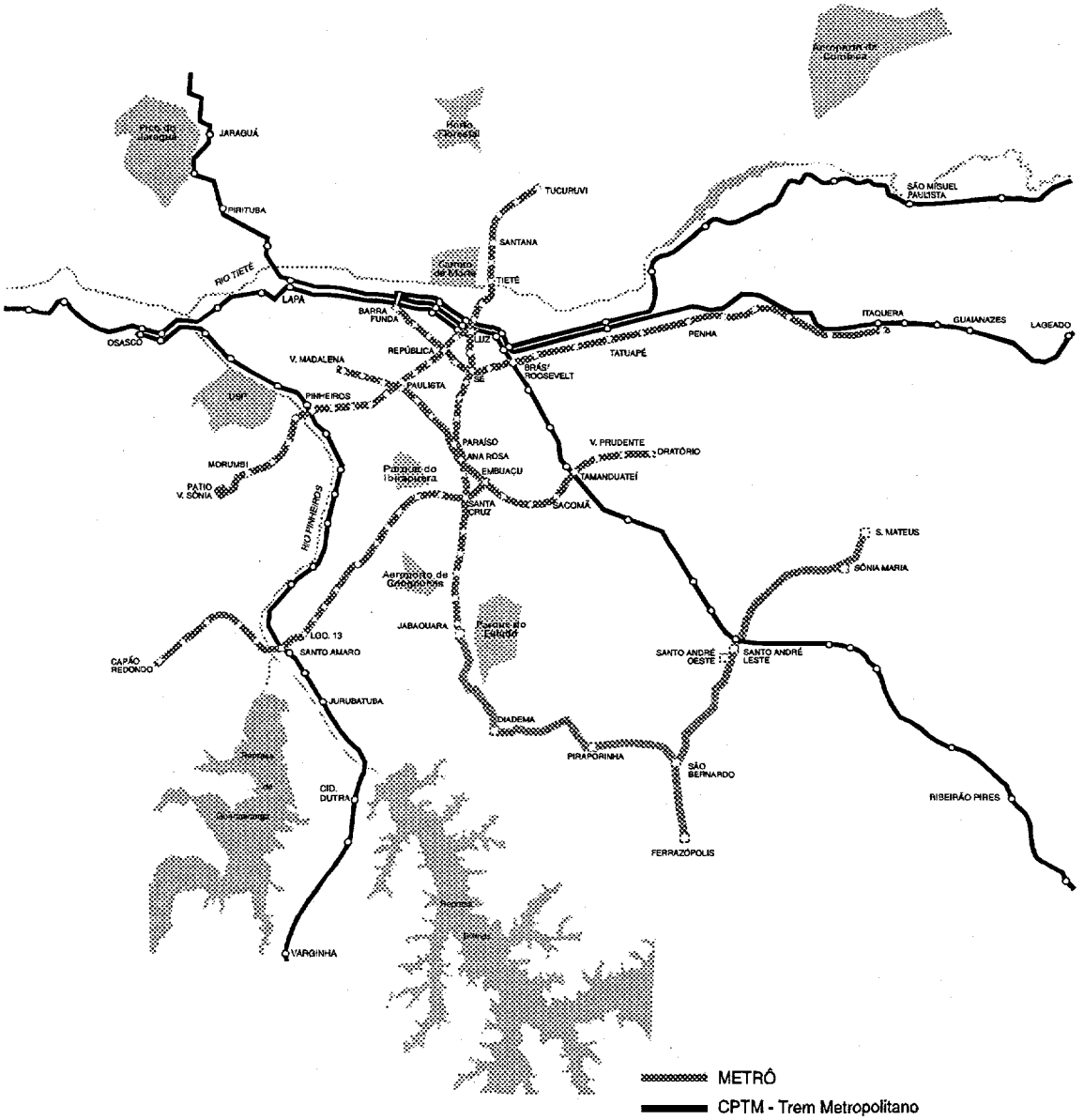
24. The project has two basic premises:

- to provide an intermediate capacity public transport service with a design concept and changes in the road infrastructure to ensure its priority over other road traffic. The traffic segregation of the trolleybuses from the rest of the general traffic had as an objective to allow a greater commercial speed and to facilitate the control and reliability of supply.
- to become a factor in inducing a process to reorganize and discipline conventional bus service in its area of influence.

25. This corridor project was originally conceived to satisfy a daily demand of 250,000 passengers, with an operation totally based on electric traction (trolleybuses). However, due to a need for higher than planned for resources for public investment and a cost-effectiveness comparison of trolleybuses with diesel buses, the Project was only partially implemented. As a result of the 188 vehicle fleet in the São Mateus-Jabaquara corridor. only 45 are trolley buses and the rest are diesel.

26. The operation and maintenance of this corridor is done through operations contracts with the private sector companies, while the EMTU is responsible for management and supervision of services.

27. The determinant factors in the decision to concession out the trolleybus corridor to the private sector were: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SANTA CRUZ
SACOMÃ
RIO PINHEIROS
S. MATEUS
SÔNIA MARIA
JABAQUARA
LGO. 13
SANTO AMARO
SANTO ANDRÉ OESTE
SANTO ANDRÉ LESTE
CAPÃO REDONDO
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SÃO BERNARDO
CID. DUTRA
RIBEIRÃO PIRES
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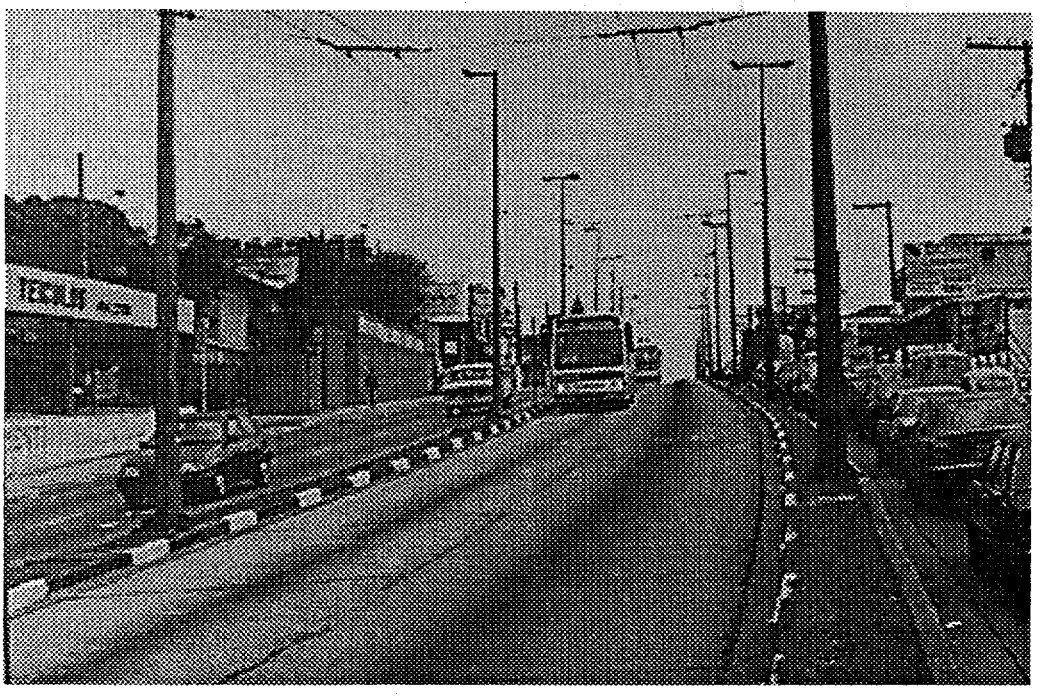
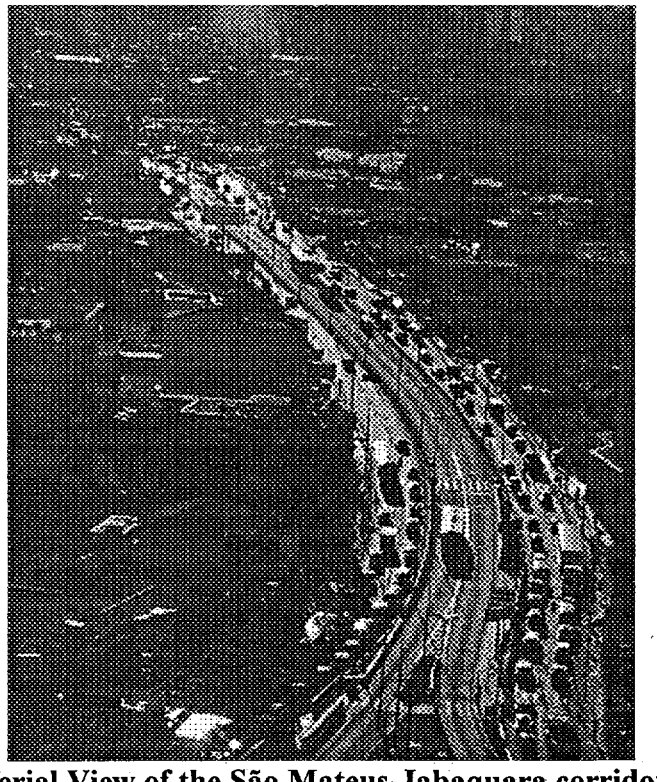
CPTM - Trem Metropolitano
EMTU - Corredor S. Mateus-Jabaquara

Figura 2



**The São Mateus-Jabaquara has an extension of 33km of which 30 km are totally segregated busway**



**Aerial View of the São Mateus-Jabaquara corridor**

- to reduce the involvement of the GSSP in public transport operations.

- to reduce the costs to the State (by 30%) in the management of services that are outsourced. The State continues with the responsibility of regulating and monitoring services.

**The São Mateus - Jabaquara trolleybus corridor**

*Physical Characteristics*

| Length | Terminals | Stops | Electrification |
|---|---|---|---|
| 33 km<br>*Of which :*<br>30 km in exclusive segregated busway and 3 km in shared way | 9 (nove)<br>*Of which :*<br>(6 with physical integration and 4 with physical and tariff integration) | 55 each way<br>*Or:*<br>111 both ways | 22.5 km already electrified and 10.5 km with electrification to be executed |

- After about 10 years without being able to complete the corridor as planned, due to lack of state budgetary resources, this concession to the private sector would allow the completion of the fleet electrification which has been postponed for more than 10 years.

- to allow concession period terms which are longer to make the trolleybus viable. Since the Brazilian legislation (Law 8666/93) only allows management contracts for operations with periods not exceeding 6 years, EMTU was forced to call for new public bids every 6 years to maintain the operation.If this six-year concession period for management contracts was maintained, the electrification of the fleet would become financially unattractive.

- This way, EMTU decided that a concession contract for services would allow longer concession terms and therefore, a depreciation compatible with the useful life of the transport system based on electric traction. With that, the comparative advantage of diesel buses over trolleybuses would be minimized.

28. In this specific project, the basic difference consists of the investment and operating costs of a diesel bus and a trolleybus, since the other investments on infrastructure, such as the segregated right-of-way and part of the electrification, had already been done by the State. Amongst the advantages and reasons which led EMTU to opt for total electrification of the fleet and return to its original concept for the São Mateus-Jabaquara corridor were:

- the emission of pollutants is zero and the noise caused is much less than the normal noise in urban roads, allowing more comfort to the users and less degradation in the areas surrounding the corridor. In fact, the famous 9th of July busway corridor with diesel buses, carrying record volumes above 20,000 pphd is, in retrospect, a failure from the environmental standpoint since it transformed what was once a beautiful avenue, into an area where only auto mechanic shops and depots are located.

- the operating conditions in segregated rights-of-way is favorable to trolleybuses because they allow acceleration and deceleration which is more controlled with maximum speeds which can be limited to 60km/hour, improving therefore safety conditions.

Once the advantages of a trolleybus operation were identified , both for the users as well as for the population who lives close to the busway, EMTU undertook a financial simulation to determine the cost increment to be incurred by the concessionaire by replacing diesel buses by trolleybuses, all other assumptions being the same. The evaluation pointed out that the incremental financial costs to be supported by the concessionaire with the electrification of the corridor would be equal to 2.5-2.8% of the fare revenues.The comparison of the situation with project (trolleybus fleet) vs. without project (diesel bus fleet plus existing EMTU fleet), using useful lifes for the diesel buses and trolley buses of respectively 10 and 20 years yield a internal rate of return of 14% for the situation with project without accounting for the environmental benefits. Investment and operating costs per vehicle are given below

29. Scope of the concession of trolleybus services to the private sector:

*Objective of the Concession*;

- operation and maintenance of the metropolitan corridor (São Mateus-Jabaquara) including total fleet electrification within five years;

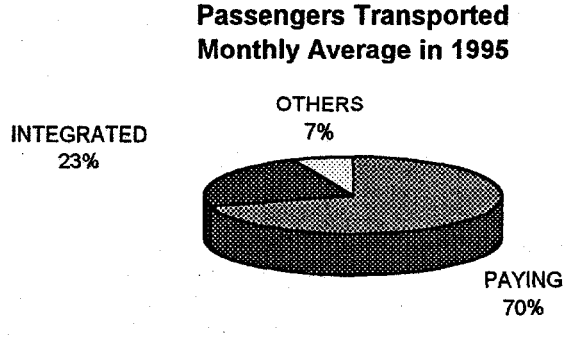
- maintenance of the road exclusive right-of-way and the aerial network;

- implementation of the electrification and operation of the trolley bus system in a 14 km link between the Diadema (center) municipality and São Paulo, Brookline, on the banks of the Pinheiros River, near a future train station.

- acquisition from EMTU-SP, at market prices, defined in the bidding documents, of the trolleybus fleet in operation (46 vehicles); auxiliary vehicles, depots, tools and equipment.

*Ridership Data :*

| | |
|---|---|
| PAYING PASSENGERS | 4.490.176 |
| INTEGRATED PASSENGERS | 1.460.155 |
| OTHERS | 419.173 |
| TOTAL PASSENGERS (Monthly Average for 1995) | 6.369.504 |
| N ° OF TRIPS TAKEN | 92.525 |
| LEVEL OF SERVICE | Average at peak hour = 5,4 Passangers/m²<br>Average between peak hour = 3,5 Passengers/m² |
| MAXIMUM HEADWAY | 20 Minutes |
| FLEET | 46 Trolleybus<br>120 diesel buses<br>23 articulated diesel buses |
| TARIFF | R$ 1,00 (US$1=R$1.06) |



**INVESTMENT COST (Trolleybus vs Diesel Fleet)**
**- 000's of $R**

| | TOTAL COST | FLEET | COST/VEHICLE |
|---|---|---|---|
| Trolleybus Fleet | | | |
| Single Trolley (Padron type) | 27,748 | 119 | 233 |
| Articulated Trolley | 14,382 | 35 | 411 |
| Diesel Fleet | | | |
| Single Bus (Padron Type) | 14,280 | 119 | 120 |
| Articulated Bus | 7,000 | 35 | 200 |

**OPERATIONAL COST PER VEHICLE /YEAR**
**000'S OF REAIS**

| Year | 1 | 5 | 10 | 15 | 20 |
|---|---|---|---|---|---|
| *WITH ELECTRIFICATION* | | | | | |
| *(TROLLEYBUSES)* | | | | | |
| *Single* | | | | | |
| *Operating cost* | 103.82 | 101.11 | 109.35 | 110.47 | 110.47 |
| ***TOTAL COST*** | **115.72** | **115.92** | **124.17** | **125.29** | **117.07** |
| *ARTICULATED* | | | | | |
| *Operating cost* | 101.63 | 99.4 | 112.17 | 116,11 | 116.11 |
| ***TOTAL COST*** | **120.31** | **123.31** | **136.11** | **140.06** | **140.06** |
| *Existing EMTU Fleet* | | | | | |
| *Operating cost* | 98.33 | 98.33 | 98.33 | 98.33 | 98.33 |
| *TOTAL COST* | **108.67** | **108.67** | **108.67** | **108.67** | **108.67** |
| *WITHOUT ELECTRIFICATION* | | | | | |
| *DIESEL PADRON* | | | | | |
| *Operating cost* | 101.29 | 104.29 | 106.97 | 104.29 | 106.97 |
| *DEPRECIATION* | 11.61 | 11.61 | 11.61 | 11.61 | 11.61 |
| *TOTAL COST* | **112.89** | **115,91** | **118.58** | **115.91** | **118.58** |
| *DIESEL ARTICULATED* | | | | | |
| *Operating cost* | 96.83 | 101.63 | 105.91 | 101.63 | 105.91 |
| *DEPRECIATION* | 18.69 | 18.69 | 18.69 | 18.69 | 18.69 |
| *TOTAL COST* | **115.51** | **120.31** | **124.60** | **120.31** | **124.60** |
| *Existing EMTU Fleet* | 98.33 | 98.33 | 98.33 | 98.33 | 98.33 |
| *Operating cost* | 10.35 | 10.35 | 10.35 | 10.35 | 10.35 |
| *TOTAL COST* | **108.67** | **108.67** | **108.67** | **108.67** | **108.67** |

(*) OPERATING COST INCLUDES LABOR, MATERIALS, MAINTENANCE COSTS AND ENERGY AND FUEL

30. *Concession period*: 20 years

31. *Ownership:*

- infrastructure, including the administrative installations, parking and vehicle maintenance areas exclusive right-of-way integration terminals, bus stops and systems and equipment which already existed continue as state property.

- the trolley buses totally depreciated during the concession will be transferred to the government. The trolley buses which will not be fully depreciated by the end of the concession could be acquired by the state for its residual value.

32. *Service Specification*

- the State defines the norms and guidelines for the services to be operated and these were clearly defined in the bidding documents. The concessionaire prepares the Operating Plan and submits it for the approval of the EMTU-SP, which will also be responsible for its enforcement

33. *Tariff Authority*

- the State is responsible for setting the tariff and for reviewing it in such a way as to ensure the economic and financial equilibrium of the trolleybus system taking into account its integration with other modes in the SPMR.

*34. Service Remuneration*:

- it will be a revenue for the concessionaire, the revenues derived from the fares paid by the user, the revenues resulting from legally accessible advertisement in the vehicles and other revenues previously approved by the State.

35. *Important aspects of the bidding process*:

- both national and international consortia were allowed to bid.

- the concessionaire was allowed to initiate the operation of the corridor with diesel vehicles, but had, five years after signing the concession contract, the obligation to have the total fleet composed exclusively of trolleybuses

- the bid documents required the proponents to indicate a cash flow for the twenty years of the concession, considering a 15% of the revenues for payments to EMTU for the management of the system, administration of terminals and payment of electrical energy for traction

- the winner of the concession had, after signing the contract, to establish a company with the specific purpose of operating the system

- the proposals were presented in three envelopes: pre-qualification, technical proposal and price proposal

36. *Selection Criteria*:

- only the pre-qualified firms had their technical proposals opened, based on technical criteria clearly defined in the bidding documents

- only proponents whose technical proposals were accepted could participate in the price proposals

- the winner of the bid was the proponent who offered the highest percentage of the gross revenues to the State

37. Results of the Bidding Process

- two consortia and one firm, all local, participated in the bid: Metrobus Consortium, Metropolitan Transport Consortium, and Pássaro Marrom Bus Company

- the winner, besides the 15% of the gross revenues mentioned above, offered 1.5% of the daily gross revenues towards the acquisition of the assets defined in the bid and 0.45% of the revenues as a royalty for the concession of the services. The total gross revenue expected is US$7.5 million per year.

- The winner was Metropolitan Transport Consortium which established a specific company for the concession called METRA- SISTEMA DE TRANSPORTE METROPOLITANO. METRA started the operation of the corridor in May 1997 with 22 new trolleybuses acquired with BNDES (FINAME) financing.

Conclusions

38. The São Paulo Municipality program was quite imaginative and despite its failure to materialize, it was a noteworthy experience which generated a lot of interest and also plenty of lessons for future concessions. Some of these lessons are:

- Brazilian bus private sector operators, who in general are traditional entrepeneurs, must be taught how to prepare financing plans or at least where to get the best advice to put together their financial engineering design of the project. In the case of São Paulo Municipality all consortia turned to BNDES for financing probably because their loan interest rates are lower than those of commercial banks, but also because the concession was with government.

Once they were turned down they did not consider other possibilities such as the International Finance Corporation or other private sector related development institutions. One reason could be that the former normally require federal approval and the process takes time. Neither as the São Paulo Municipality considered the possibility of using the partial risk gurantees of the World Bank to lower the rates of commercial bank loans to the private consortia.

- In any case, São Paulo Municipality should also have undertaken detailed economic evaluation of the projects, that is , from the standpoint of the São Paulo Metropolitan Region as a whole, including the impacts on other modes and systems integration. This analysis is required by all the development bilateral and multilateral financial institutions.
- It seems, that in a situation in which the private operators are paid on the basis of vehicle-km supplied and in which all revenues are collected by the State which then pays the operators, the concession contracts or the operating revenues cannot be easily used as guarantees. This indicates that, prior to defining the tariff mechanisms, governments should think through the impacts that they might have on financing, since the revenues collected are often the best guarantee that can be offered.
- Finally, it is possible that the market felt that the risks invoved in building and operating the system outweighed the benefits and that the São Paulo and Brazilian market were not yet prepared to accept such a challenge.

39. The State of São Paulo learned from the Municipality experience and was more cautious in its concession bidding documents. The concession was for the full operation for 20 years but, insofar as investment is concerned, only part of the infrastructure had to be built, because the other part was already in place. This in itself, allows the winning consortium to generate revenues using the existing system and helps in reducing the amount that must be borrowed to complete the fleet electrification and the rest of the electrification infrastructure (poles, overhead catenary). The concession was less risky for the concessionaire, yet the government was achieving its objectives of completing an environmentally friendly project with the help of the private sector. With this concession the State was therefore able to overcome a chronic lack of budgetary resources needed to complete the corridor. Given the length of the period of the concession, a clearly established tariff review policy and the ownership of traffic revenues, the concessionaire had less problems in obtaining the financing required to complete the infrastructure and the fleet electrification. This concession was so far a success and an example to be followed.

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